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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,656	06/22/2006	J. Christopher Anderson	54A-000510US	3238

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EXAMINER	
GEBREYESUS, KAGNEW H	

ART UNIT	PAPER NUMBER
1656	

NOTIFICATION DATE	DELIVERY MODE
07/09/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Office Action Summary	Application No.	Applicant(s)	
	10/563,656	ANDERSON ET AL.	
	Examiner	Art Unit	
	KAGNEW H. GEBREYESUS	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8,12-18 and 20-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5, 6, 8, 12-16, 18, 20-23* is/are rejected.

7)☒ Claim(s) *4 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response on April 07, 2008 in reply to the Office Action dated January 04, 2008 is acknowledged. Applicants have cancelled claims 7, 9, 10, 11, 19. Claims 24-49 were cancelled in the preliminary amendment submitted on January, 05, 2006. Claims 1-6, 8, 12-18 and 20-23 are present for examination.

Withdrawn -Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims1-23 now applied to claims 1-6, 8, 12-18 and 20-23 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is withdrawn following the claim amendments.

Furthermore the rejection of claim 4 is withdrawn following the amendment.

Maintained - Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-23 now applied to claims 1-3, 5-6, 8, 12-16, 18, and 20-23 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

These claims are directed to a composition comprising a genus of OtRNA molecules with 80% identity to SEQ ID NO: 67 and suppress a suppressor codon when used with a genus of ORS molecules (broadly encompassed in the recitation; "derived from RS selected from...").

Applicants argue:

"...Current claims meet the written description requirement. Written description is replete throughout the original specification for the claims, as currently amended. For example, compositions comprising glutamyl-tRNAs at least 80% identical to SEQ ID NO.: 67 can be found throughout the specification, e.g., at paragraphs 16, 20, 22, 24, 34 to 38, 49, 59, 63, 65, 90, 123, 124 and 144; and in the Sequence Comparison, Identity and Homology section starting at paragraph 142. Glutamyl-tRNA synthetases derived from the listed archaeal RSs can be found throughout the original specification, e.g., paragraphs 19, 22, 24, 41, 88, 95, 96, and 144; the Examples, and in the figures.."

Furthermore Applicants argue:

"...The present claims are characterized by identified structures and are not described based unduly on functional aspects of the compositions. Applicants respectfully request withdrawal of the written description rejections."..."

Applicant's argument has been carefully considered but not found persuasive. As broadly interpreted the instant claims are drawn to a composition comprising any

OtRNA with 80% sequence similarity to SEQ ID NO: 67 that functions together with any tRNA synthetase derived from *Archaeoglobus fulgidus* synthetase, *Methanosarcina mazei* synthetase, *Methanobacterium thermoautotrophicum* synthetase, *and a Pyrococcus horikoshii* synthetase, thus tRNA synthetase sequences with any number of variations are included.

However the specification only teaches compositions comprising the structure of a few OtRNA/ORS pairs comprising the OtRNA of SEQ ID NO: 67 that can be aminoacylated by the archaeal tRNA synthetases of SEQ ID NO: 69, 73, 75 or 77 and suppress a selector codon with variable efficiencies. The specification fails to describe any other OtRNA/ORS pair with any other structure that function to suppress a selector codon with any efficiency.

The tRNA and tRNA synthetase sequences with varying percentages recited in the specification do not show a structure/function correlation or functional complementarity in suppressing a selector codon thus do not put the public in possession of the claimed compositions comprising a genus of OtRNA/ORS.

"The essential goal of the description of the invention requirement is to clearly convey the information that the Applicant has invented the subject matter which is claimed " In re Barker, 559 F.2d 588, 592 n.4, 194 USPQ 470, 473 n.4 (CCPA 1977). Another objective is to put the public in possession of what the applicant claims as the invention.

However the description of a composition comprising a single tRNA of SEQ ID NO: 67 and tRNA synthetases from a few archaebacteria that function to suppress a selector codon with variable efficiencies do not allow a skilled artisan to envision the detailed chemical structure of the encompassed genus of OtRNA/ORS pairs in the claimed composition. Therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method.

Claim 8 is rejected because the specification does not describe OtRNA sequences comprising modification of over 15 nucleotides in a 78 nucleotide sequence (SEQ ID NO: 67) that functions with any ORS to suppress a suppressor codon. Furthermore claim 8 recites: "...comprises an amino acid sequence comprising any one of SEQ ID NO: 69..." Thus it comprises variants of the recited ORS sequences.

The structure function correlation of the OtRNA and ORS is essential in conveying what Applicants are in possession of in terms of the claimed subject matter. Therefore the rejection of claims 1-3, 5-6, 8, 12-16, 18, and 20-23 is maintained.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-23 now applied to claims 1-3, 5-6, 8, 12-16, 18, and 20-23 stand rejected under 35 U.S.C. 112, first paragraph, because while the specification is

enabling for a composition or a cell co-expressing SEQ ID NO: 67, (a consensus designed tRNA) with a G:C pair at position 10:28 (AE(GC)) with the tRNA synthetase of AfERS (SEQ ID NO: 69), MmERS (SEQ ID NO: 73), MtERS (SEQ ID NO: 75), or PhERS (SEQ ID NO: 77) that display variable IC_{50} suppressor efficiencies depending on the ORS used, does not provide enablement for a composition, a translation system or a cell comprising any O-tRNA comprising up to 20% variation compared to the OtRNA of SEQ ID NO: 67 and any O-tRNA synthetases variant derived from *Archaeoglobus fulgidus* synthetase, *Methanosarcina mazei* synthetase, *Methanobacterium thermoautotrophicum* synthetase, *and a Pyrococcus horikoshii* synthetase.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required, are summarized In re Wands (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988). The Wands factors are: (a) the quantity of experimentation necessary, (b) the amount of direction or guidance presented, (c) the presence or absence of working example, (d) the nature of the invention, (e) the state of the prior art, (f) the relative skill of those in the art, (g) the predictability or unpredictability of the art, and (h) the breadth of the claim.

N.B. MPEP 2164.04 states, "[w]hile the analysis and conclusion of a lack of enablement are based on the factors discussed in MPEP § 2164.01(a) and the evidence as a whole,

it is not necessary to discuss each factor in the written enablement rejection" and that "[t]he language should focus on those factors, reasons, and evidence that lead the examiner to conclude that the specification fails to teach how to make and use the claimed invention without undue experimentation, or that the scope of any enablement provided to one skilled in the art is not commensurate with the scope of protection sought by the claims." Accordingly, the Factors most relevant to the instant rejection are addressed in detail below.

In the instant case, the specification teaches that the suppressor activity/efficiency of a selector codon varies depending on the structure of both the tRNA and the tRNA synthetase used. Selector codons were suppressed with variable efficiencies when glutamyl-tRNA synthetases from various archaebacteria (*Archaeoglobus fulgidus (AfRS), Methanosarcina mazei (MmRS),* a *Methanobacterium thermoautotrophicum (MtRS),* and *Pyrococcus horikoshii (PhRS))* were used with the consensus derived tRNA of SEQ ID NO: 67.

However the breadth of the claims encompasses a composition or cell co-expressing any glutamyl-O-tRNA with at least 80% sequence identity to SEQ ID NO: 67 (thus with up to 20% variation in a 78 nucleotide sequence) and any tRNA synthetase derived from the above archaebacteria.

However, the nature of the invention is such that the ability to suppress with any efficiency must be determined empirically. The specification does not provide any direction or guidance for the suppressor activity of a tRNA with up to 20% variation

compared to SEQ ID NO: 67 and any tRNA synthetase derived from the ORS of SEQ ID NO: 69, 73, 75 or 77.

Therefore the claims encompass an enormous scope wherein the ability to suppress a selector codon for any Glu-tRNA/Glu-RS pair must be determined experimentally. Even if the Glu-tRS in the composition was defined with structure (e.g. SEQ ID NO: 69, 73, 75, 77), the claims still encompass an enormous scope because the specification does not teach any tRNA with up to 20% modification (i.e. at least 15 nucleotides) relative to SEQ ID NO: 67 (a sequence with 78 nucleotides) while retaining suppressor activity. Thus the specification does not teach how to use the invention commensurate in scope with the claims.

Furthermore the standard for meeting the enablement requirement is whether one of skill in the art can make the invention without undue experimentation. The amount of experiments required to identify all possible Glu-tRNA with at least 80% sequence identity to SEQ ID NO: 67 that can retain suppressor activity when used with any tRNA synthetase(derived from SEQ ID NO: 69, 73, 75, 77) (thus including but not limited to the synthetases of SEQ ID NO: 69, 73, 75 and 77) is enormous.

The Examiner finds that one skilled in the art would require additional guidance, such as information regarding the specific cognate Glu-tRNA /synthetase pairs or guidance on what specific structures of the tRNA and the tRNA synthetase that must be conserved to enable suppressor activity of a selector codon. Without such a guidance, the experimentation left to those skilled in the art is undue.

The following objections are necessitated by amendment

Claim Objections

Claim 4 is objected to because of the following informalities: The amendment of the recitation "or a" to "and a" is confusing because the tRNA of SEQ ID NO: 67 cannot be encoded by both strands.

Furthermore 17 and 22 are objected to because of the following informalities: the word "encoded" in claims 4, 17 and 22 is confusing. Applicants may replace this word with "transcribed".

Furthermore claims 4 and 17 are objected to for depending upon rejected claims. Appropriate correction is required.

Furthermore claims 3, 5, 6 and 8 are objected to for lacking particular antecedent basis for the recitation "the selector codon."

This action is a **final rejection** and is intended to close the prosecution of this application. Applicant's reply under 37 CFR 1.113 to this action is limited either to an appeal to the Board of Patent Appeals and Interferences or to an amendment complying with the requirements set forth below.

If applicant should desire to appeal any rejection made by the examiner, a Notice of Appeal must be filed within the period for reply identifying the rejected claim or claims appealed. The Notice of Appeal must be accompanied by the required appeal fee of $510.00.

If applicant should desire to file an amendment, entry of a proposed amendment after final rejection cannot be made as a matter of right unless it merely cancels claims or complies with a formal requirement made earlier. Amendments touching the merits of the application which otherwise might not be proper may be admitted upon a showing a good and sufficient reasons why they are necessary and why they were not presented earlier.

A reply under 37 CFR 1.113 to a final rejection must include the appeal from, or cancellation of, each rejected claim. The filing of an amendment after final rejection, whether or not it is entered, does not stop the running of the statutory period for reply to the final rejection unless the examiner holds the claims to be in condition for allowance. Accordingly, if a Notice of Appeal has not been filed properly within the period for reply, or any extension of this period obtained under either 37 CFR 1.136(a) or (b), the application will become abandoned.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAGNEW H. GEBREYESUS whose telephone number is (571)272-2937. The examiner can normally be reached on 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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6/25/2008

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